7/25/2004

To: Paul Dabbs
Mike Wade

From: Alex Hildebrand

Herewith are my comments on Chapter 3. DWR requested that comments be routed through the caucuses, but that is not feasible when we are only given a few days to comment.

1) Overview of Uncertainty and Scenarios, 3rd and 5th paragraphs

Revise as follows:

Paragraph 3 Future scenarios, as used in this water plan update, describe different conditions over which resource managers have little or no control. Where people decide to live, what mix of industrial activity develops in a region, ~~crops that farmers decide to grow~~ public demand for an adequate and balanced food supply are changes that can happen regardless of resource planning today. Future scenarios do not represent what different interest groups hope for the future. Those visions are part of the method used to evaluate response packages (see response package discussion later in this chapter).

Paragraph 5 The following sections show some of the uncertainties in future conditions for planners to consider. By considering different future scenarios, each with different management responses, planners will be able to test the performance of responses under many of the uncertainties. ~~For example, one response package may be more water use intensive and another may be less water use intensive.~~ The scenarios should combine to cover the range of water demand that may result from public demand for direct use of water and for indirect use for domestic production of products including food, while providing an acceptable level of environmental protection.

2 ) Future Landscape (Land Use Patterns) Three paragraphs

Revise as follows:

Paragraph 1 The way we use land--the types of use and the level of intensity—has a direct relationship to water supply and water quality. It is impossible to predict precisely how land will be used in the future. People may decide to relocate to certain regions. Farmers may change cropping patterns in response to California and world markets. By better understanding the uncertainties over future land use patterns, we can better plan for those changes.

Paragraph 2 Projecting current trends has traditionally been the method for estimating future water demand. However there are resource limitations and many economic, environmental, and social factors that cause future conditions to vary from existing trends. Changes in job conditions can force people to move from one region to another or from state to state. Changes in the world food market can influence California farmers to alter crop types and crop acreage. Groundwater overdraft is not a sustainable source of water. Changes in scientific understanding of the environment can encourage habitat restoration or alter instream flows. Many factors like these can lead to land and water use patterns different from what were expected by simply projecting current trends.

Paragraph 3 Unknown forces influence future urban, agriculture, and environmental land use patterns. A good way to prepare for these future uncertainties is to build a diversified portfolio of resource management strategies. Often, the unknown is timing. For example, an estimated population for the year 2030 may actually be reached in 2025 or 2035. In this case, the mix of strategies in the plan will likely remain the same, but their timing may be different. The plan can simply be implemented incrementally at a faster pace or portions can be delayed for a few years. However, some measures can require decades to plan and implement. They must therefore be started in time to be available when needed. The following sections provide some considerations in planning for uncertainties in land use patterns.

3) Urban

Revise as follows:

Paragraph 1

According to the Department of finance, California's 2003 population of more than 36 million is expected to swell by an additional 12 million people to 48 million by year 2030. However, actual population growth will certainly be more or less than this estimate. More people means more changes in land use, leading to changes in urban runoff characteristics and water quality. The Department of Parks and Recreation projects that more people means more demand for water-based recreation, including on lakes that also serve as reservoirs for drinking water ~~treatment plants.~~ This raises concerns about the quality of those drinking water sources. See the urban land use management strategy in volume 2 for more information on water-based recreation.

Paragraph 3

Post World War II urban development in California reflects the state's automobile-dependent lifestyle. Patterns are characterized by fragmented and segregated land uses, low-density residential and strip commercial development, and a lack of connectivity within and between neighborhoods that use large quantities of land per capita. The result has been the consumption of prime farmland and the water appurtenant to that land, open space, and habitat and an increased impact on other natural resources. Larger residential parcels tend to consume more water per capita than do smaller parcels. The creation of

large amounts of impervious surfaces such as roads and parking lots results in the degradation of water quality ~~by~~ and increasing the ~~timing~~ rate and volume of surface runoff, altering streamflow and watershed hydrology, reducing groundwater recharge, and increasing stream sedimentation. It also increases the need for infrastructure to control storm runoff.

4) Agriculture

Revise as follows:

Paragraph 3

Although agricultural acreage ~~is expected to decline~~ may decline and will be relocated somewhat by urban sprawl, yield growth in the quantity of agricultural crops per acre of land ~~will continue to be the most important driving force in increasing~~ may continue to increase and will probably increase the dollar value of California food production over the next 30 years. Yield growth is expected to occur as a result of technological advances, ~~and climate change.~~ However, the consumption of water necessary to grow an adequate food supply will increase. Refer to the discussion of climate change for possible positive and negative effects of such a change. In addition, the value of crops per acre-foot of water has increased in the past and is expected to continue to increase. Irrigation efficiencies had increased as more growers use drip and sprinkler irrigation. Also, there has been a shift in commodities that produce more crop value per unit of water, but this increase in dollar value does not typically reflect an increased contribution to an adequate and balanced food supply.

Paragraph 5

The cumulative effects of overdraft and these reallocations diminish the ~~reliability~~ availability of irrigation water for food production. Agriculture cannot easily rebound in years of adequate water supply if its water supplies are greatly curtailed during dry years.. Some agricultural areas do not have usable sources of affordable groundwater to tap during water shortages. Growers of permanent crops are particularly at risk. Even growers of annual crops may be unable to obtain long-term loans or short-term credit if they do not have access to a ~~reliable~~ dependable water supply.

Paragraph 6

Agricultural water demand is ~~primarily driven~~ influenced by the crop mix grown in the state. Agricultural operations are businesses that seek to produce food and fiber profitably. Crop markets, rather than water prices, generally dominate the grower's decision regarding which crop to grow, and crop decisions are governed primarily by public preferences and need for food and other products. The grower considers the relative prices of agricultural commodities, the costs and regulations associated with labor, the costs of inputs needed to produce the crop, exchange rates, as much of

California's agricultural production is exported, and the security of the water supply. ~~Future water demands can vary widely depending on how agricultural land use patterns develop in the future.~~

AB 2587 requires the California Water Plan to include scenarios that are consistent with substantial continued agricultural production in California. The key phrase in the law is "neither the state nor the nation should be allowed to become dependent upon a net import of foreign food." In particular, the law specifies that DWR consider scenarios under which agricultural production in California is sufficient to assure that the state is a net food exporter and that the net shipments out of state are enough to cover its traditional share of "table food" use in the United States (assumed in the law to be 25 percent) plus "growth in export markets." For water plan update 2008 DWR will re-examine the AB 2587 analysis based on food forecast prepared by the CDFA, as required by the bill. The CDFA food forecast was not available for this water plan update. DWR does not believe that it can assume that 40% more people will need 40% more food unless CDFA says so. (This differs from DWR's assumption that 40% more people will need 40% more housing.)

The University of California Agricultural Issues Center prepared *Future Food Production and Consumption in California Under Alternative Scenarios* (see volume 4). The report by economists concluded that California agriculture will produce substantial quantities of food crops. The value of California food production will more than keep up with rising population and income growth in California and the rest of the United States. A presentation by an agricultural researcher to the AC and a publication by Letey and Birkle at U.C. Riverside arrives at a different conclusion. They give scientific reasons why there cannot be much reduction in the water consumed by a given crop mix in a given climate. Hence, there is unlikely to be a substantial reduction in the water consumed per person to grow an adequate and balanced food supply.

Snowpack Changes

Revise as follows:

California's water managers rely on snowpack as a massive reservoir for natural water storage. Climate change that reduces snowpack reduces the total water storage in the system. The April-July runoff , an average of 14 million acre-feet in California major rivers, comes primarily from snowmelt. The Water Plan does not include measures that could maintain the developed water supply if this snowpack storage is lost. The Water Plan is inconsistent in making no estimate of potential loss in deliverable water supply while at the same time accepting the forecast in the AIC report (see above) that relies on climate change to increase yield per acre foot of water. Computer modeling of California hydrology based on projected global climate change scenarios demonstrates consistent and significant effects on Sierra snowpack.

Table 3-xx Factors Affecting Regional and Statewide Water Demands and Supplies

As the work on Water Plan Update 2008 moves forward, DWR and stakeholders may find a need to add new factors to help answer questions about future scenarios or may decide to eliminate some factors. Although all the factors in the table are needed to define the strategies, SWR proposes to begin the analysis by varying only the factors in the upper portion of the table. These factors are primarily related to land and water use patterns. DWR may find a need to vary other factors in the table to gain insight to specific questions. (Volume 4 Reference Guide includes more discussion on these examples of future scenarios and responses.) There is basically no difference among the three scenarios in respect to agriculture. They are all based primarily on an extrapolation of current trends and a disregard of agriculture's function to meet a social need for food instead of just a business for the welfare of farmers. None of these scenarios in this issue of the Water Plan comply with the statutory requirement that the Water Plan estimate the future water supply needed to provide for all the state's future needs, and that it identify measures which would meet those needs. (The "needs" include adequate food and other products, not just housing). The rationale for this non-compliance is given in Chapter 4.)